

December 1972

NW31-S
RM. 1313
KSC HQS.
-1-

B72-10233



AEC-NASA TECH BRIEF



AEC-NASA Tech Briefs announce new technology derived from the research and development program of the U.S. AEC or from AEC-NASA interagency efforts. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Mercury In The Environment

A study has been directed toward an understanding of the uses, sources, distribution, and toxic effects of mercury. The main emphasis is on man as the distributor and recipient of mercury in the environment. The societal flow of mercury is initially considered; the U.S. demand is divided into dissipative and potentially recyclable uses, and several important externalities to materials operations are identified. The main conclusion is that there is a need to pay more attention to the social implications of present use practices and to recycle much more effectively or develop alternatives to present mercury technology.

A discussion of the problem in assessing mercury concentrations in environmental materials is provided. Data for "background" and "contaminated" situations in air, water, rocks, soils, sediments, sludges, fossil fuels, plants, animals, foods, and man are drawn together and briefly evaluated. In a consideration of the transformation of mercury in the environment, it is concluded that mercury in any form is potentially exchangeable among the air, land, and water phases, and that it represents a unique pollutant because it is essentially indestructible.

Details are provided regarding the toxicity of mercury and its compounds. The criteria for mercury levels are based almost entirely on relatively short-term effects, and virtually no information is available on the long-term effects of sub-acute exposure to mercury. Nevertheless, tentative standards and guidelines have been set by several organizations and U.S. Government agencies for mercury in air, drinking water, and food, and these are provided along with some background information.

Appendices are included which consider aspects of the physical and chemical properties of mercury, evaluate analytical procedures used for mercury determination, discuss the chlor-alkali manufacturing process and procedures for reducing mercury losses, and provide some present and future needs with respect to our understanding and dealing with mercury in the environment.

This report should be of interest and use to governmental pollution control agencies, medical researchers, ecologists and industries working in the area of pollution abatement and control.

Notes:

1. The following documentation may be obtained from:
National Technical Information Service
Springfield, Virginia 22151
Single document price \$3.00
(or microfiche \$0.95)

Reference: ORNL NSF-EP-1 Mercury in the Environment: The Human Element

2. Technical questions may be directed to:
Mr. Glenn K. Ellis
Technology Utilization Officer
Office of Information Services
U.S. Atomic Energy Commission
Washington, D.C. 20545

Reference: TSP72-10233

(continued overleaf)

Patent status:

Inquiries concerning rights for commercial use of this information may be made to:

Mr. George H. Lee, Chief
Chicago Patent Group
U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

Source: Robin A. Wallace, William Fulkerson,
Wilbur D. Shults and William S. Lyon of
Oak Ridge National Laboratory
under contract to
Atomic Energy Commission
(AEC-10048)